JC08 Rec'd PCT/PTO 05 FEB 2001

FORM PTO-1390 (REV. 1-98) U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		4100-0122P
		U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 09/762210 NEW
INTERNATIONAL APPLICATION NO. PCT/EP99/07101	**INTERNATIONAL FILING DATE** September 23, 1999	**PRIORITY DATE CLAIMED** October 26, 1998

TITLE OF INVENTION
PROCESS FOR DISPLAYING THE MODULATION ERROR RATIO OF A MULTICARRIER SIGNAL

APPLICANT(S) FOR DO/EO/US
WOLF, Peter; BALZ, Christoph

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39 (1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☒ has been transmitted by the International Bureau. WO 00/25471
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(3)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(2)).
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98./International Search Report (PCT/ISA/210) w/ 6 documents
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.
    ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
    1.) PCT Substitute Claims Letter
    2.) Two (2) sheets of Formal Drawings

U.S. APPLICATION NO (if known, see 37 CFR 1.5)	INTERNATIONAL APPLICATION NO	ATTORNEY'S DOCKET NUMBER
09/762210	PCT/EP99/07101	4100-0122P

17. ☒ The following fees are submitted:

		CALCULATIONS	PTO USE ONLY
BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5):			
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO.	**$1,000.00**		
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO	**$860.00**		
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO.	**$710.00**		
International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4)	**$690.00**		
International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4).	**$100.00**		
ENTER APPROPRIATE BASIC FEE AMOUNT =		$ 860.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☒ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).		$ 130.00	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	4 - 20 =	0	X $18.00	$ 0	
Independent Claims	1 - 3 =	0	X $80.00	$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)		None	+ $270.00	$ 0	
			TOTAL OF ABOVE CALCULATIONS =	$ 990.00	
Reduction of ½ for filing by small entity, if applicable. Applicant claims Small Entity Status in accordance with 37 CFR 1.27.				$ 0	
			SUBTOTAL =	$ 990.00	
Processing fee of **$130.00** for furnishing the English translation later than ☐20 ☐30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$ 0	
			TOTAL NATIONAL FEE =	$ 990.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +				$ 0	
			TOTAL FEES ENCLOSED =	$ 990.00	
				Amount to be: refunded	$
				charged	$

a. ☒ A check in the amount of $ 990.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account. No. ___________ in the amount of $_______ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 02-2448.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

Send all correspondence to:
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SIGNATURE

BUTLER, F. PRINCE
NAME

#25,666 (FPB)
REGISTRATION NO.

/cqc February 5, 2001

(REV. 01/22/01)

PATENT

P26,6401.22P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant:	WOLF, Peter et al.	Conf.:	
Int'l. Appl. No.:	PCT/EP99/07101		
Appl. No.:	New	Group:	
Filed:	February 5, 2001	Examiner:	
For:	PROCESS FOR DISPLAYING THE MODULATION ERROR RATIO OF A MULTICARRIER SIGNAL		

PRELIMINARY AMENDMENT

BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, DC 20231

February 5, 2001

Sir:

The following Preliminary Amendments and Remarks are respectfully submitted in connection with the above-identified application.

AMENDMENTS

IN THE ABSTRACT:

Please add an Abstract from the Abstract attached hereto.

IN THE SPECIFICATION:

Please amend the specification as follows:

Before line 1, insert --This application is the national phase under 35 U.S.C. § 371 of PCT International Application No. PCT/EP99/07101 which has an International filing date of September 23, 1999, which designated the United States of America.--

IN THE CLAIMS:

Please amend the claims as follows:

Claim 4: Line 1, change "one of the preceding claims" to --claim 1--

REMARKS

The specification has been amended to provide a cross-reference to the previously filed International Application. An Abstract has been added due to it being omitted during the translation of the International Application. The claims have also been amended to delete multiple dependencies and to place the application into better form for examination. Entry of the present amendment and favorable action on the above-identified application are earnestly solicited.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

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4100-0122P

ABSTRACT

The invention relates to a method for displaying the mean modulation error MER_{RMS} of a multiple carrier (OFDM) signal in which: a) The square of the error vector is calculated according to the relation (I) for each actual modulation symbol I of each individual carrier k of the multiple carrier signal; b) this value m_k is offset with the content of a storage location of a memory, said storage location being assigned to the same carrier k, which comprises the same number of storage locations as the OFDM signal carrier, according to relation (II) (iteration formula) with $A2_{k,1+1}$: new measured value (instant 1+1) which should be filed in storage location k of the memory A2; $A2_{k,1}$: previous measured value (instant 1) from storage location k of memory A2; m_k: Actual measured error square for carrier k; k: Carrier number within the OFDM spectrum grows with the frequency, k=0 ... K_{max}; 1: number of the symbol, grows with time, $0 \leq 1$; c) the mean modulation error MER_{RMS} is subsequently calculated for each carrier from these values of the storage locations according to relation (III), whereby VM is the quadractically weighted mean value of the amplitude of all ideal signal states of the modulation type, used each time, of a carrier modulated with useful data, and finally d) this MER_{RMS} value is then graphically represented with the number of the carriers as an abscissa for each individual carrier k as an ordinate value of a diagram.

09/762210
English Translation JC02 Rec'd PCT/PTO 05 FEB 2001

3/PRTS

Process for displaying the modulation error ratio of a multicarrier signal

The modulation error ration (MER) is an important characteristic value for the OFDM (Orthogonal Frequency Division and Multiplexing)-Multicarrier Systems used in modern transmission technology, for example in DAB (Digital Audio Broadcasting) or DVB-T (Digital Video Broadcasting - Terrestrial), as it indicates the mean and maximum deviation of the amplitude and phase statuses (I and Q values) used in this case from the ideal signal statuses of the digital modulation used and therefore provides a measure for the signal quality. The modulation error ratio is given as mean value and as maximum value. In order to calculate it all decision fields of the modulation vector diagram are examined in succession. In order to determine the maximum value, the maximum sum of the differential vector from the ideal signal status to the signal statuses which have been produced (error vector) is sought in each decision field. In addition to the maximum value of the intermediate results, the maximum value of the modulation error ratio MER_{MAX} is then calculated in accordance with the equation

$$MER_{MAX} = 100 \cdot \frac{\mathrm{Max}\{|\text{ error vector }|\}}{\overline{VM}} \quad [\%]$$

In this case $\overline{VM}$ is the square weighted mean value of the amplitude of all ideal signal statuses of a carrier modulated with user data of the modulation type used in each case, which value is known or can be easily calculated for the modulation types used most frequently, such as 16QAM etc., and is used as a constant in the calculation.

All sums of the differential vectors from the ideal status to the status which has been produced are square and added to obtain the mean modulation error ratio and the number of symbols is counted. Subsequently, the mean modulation error ratio MER_{RMS} is calculated in accordance with the equation

$$MER_{RMS} = 100 \cdot \frac{\sqrt{\frac{1}{n}\sum_{n}|\text{error vector}|^2}}{\overline{VM}} \qquad [\%]$$

Both of the values calculated in per cent in accordance with the above equations can also be given in the logarithmic scale in dB in accordance with the following conversion:

$$MER_{dB} = -20 \cdot \lg\left(\frac{MER\,[\%]}{100}\right) \qquad [dB].$$

The term modulation error ratio and the corresponding laws of calculation for it have been established and standardised by the DVB Measurement Group in the ETR 290 for DVB-C and DVB-S. Fig. 1 shows by way of example the vectors required to calculate the modulation error ratio in the first quadrants and this is for 64 QAM.

It is known to calculate the modulation error ratio for a single carrier in each case in accordance with the above formulae and to display it as a numerical value. For multicarrier systems with 1000 or even more individual carriers, as is the case in DAB with 1536 carriers and in DVB with 1705 or 6817 carriers even, this type of modulation error ratio calculation and individual carriers illustration is no longer useful.

It is therefore the object of the invention to demonstrate a process with which the modulation error ratio can be calculated simply with the lowest possible degree of calculation complexity and, in addition, can be illustrated in such a way that a simple and clear metrological evaluation is possible for all carriers.

This object is achieved for displaying the mean modulation error ratio in accordance with claim 1 and for displaying the maximum modulation error ratio in accordance with claim 2, these two possibilities preferably being used in combination, so a user is simultaneously shown the mean and maximum modulation error ratios as a function of the frequency. Advantageous developments emerge from the remaining sub-claims.

In accordance with the invention the mean or maximum modulation error ratio is calculated by simple successive calculation stages, the result corresponds in this case to the equations mentioned at the start, the successive calculation stages demonstrated in accordance with the invention solve this calculation in a shorter calculation time, however, and in a manner which requires less memory space and can be executed for example on any conventional PC. Owing to the storage of the individual calculated values in memory locations of a memory having as many cells as carriers, the result of the modulation error ratio determination is directly related to the individual carriers and can therefore be directly illustrated on a graph as a function of the frequency for the entire multicarrier frequency band. Therefore, a user can immediately determine at which points of the spectrum critical conditions are present, and therefore a multicarrier system can also be analysed in a simple manner metrologically with regard to modulation error ratios for the first time.

The modulation error ratio of an individual carrier is subject to large statistically-induced fluctuations. It is therefore necessary that, in accordance with the invention, integration is initially carried out via a plurality of symbols of data modulated on the individual carriers. A prerequisite for the process according to the invention is knowledge of the signal constellation of each individual carrier, as is illustrated schematically for 64 QAM in Fig. 1 for a quadrant in the I/Q plane. Initially the square of the error vector of the current individual carrier k is calculated for each current symbol in accordance with the equation

$$m_k = |\text{error vector}_k|^2$$

As only a single point of the signal constellation is evaluated here for each carrier, the summation in accordance with the general equation mentioned at the start is omitted.

The result m_k for each individual carrier k is then compared separately in a second calculation stage with the contents of a memory location reserved specifically for this individual carrier, which memory location is in turn associated with a memory A1. In this case, this memory A1 has as many memory locations K_{MAX} + 1 as there are carriers in the OFDM system. A check is made in the memory location of the memory A1 associated with the current carrier k as to whether the current measured value m_k is greater than the value already stored in this memory location. If the stored value is greater than the current value the memory location contents remain unchanged. If the current value is greater this is input as a new value into the memory location. In this way the maximum value is stored for each carrier.

At the same time the result of the m_k of the current modulation error ratio is set off separately for each individual carrier against the contents of a separate memory location of the second memory A2, which also has as many memory locations as there are carriers in the OFDM system. Here, the value $A2_k$ hitherto present in the memory location k is set off against the current measured value m_k in accordance with the following equation:

$$A2_{k,1-1} = \frac{(A2_{k,1} \cdot 1 + m_k)}{(1+1)} \qquad \text{(iteration formula)}$$

where

$A2_{k,1+1}$ is the new measured value (instant 1+1) which is to be stored in memory location k of the memory A2,

$A2_{k,1}$ is the previous measured value (instant 1) from memory location k of the memory A2,

m_k is the current measured error square for carrier k,

k is the carrier number within the OFDM spectrum, increases with the frequency, $k = 0 \ldots K_{max}$,

1 is the number of the symbol, increases with time,
$0 \leq 1$.

This calculation stage is repeated for all carriers of the symbol. Then, the same process is carried out again for the next symbol for all carriers. Thus a representative picture of the mean modulation error ratio

is produced over the course of many symbols in the memory A2 as a function of the frequency or the respective carrier number k. These calculation stages provide exactly the same result as the standardised equation mentioned at the start.

Alternatively the third calculation stage can also be divided in the following manner. Initially an intermediate value is calculated in accordance with the following equation:

$$A2'_{k,1+1} = A2'_{k,1} + m_k \quad \text{(iteration formula)}$$

where

$A2'_{k,1+1}$ is the new measured value (instant 1+1) which is to be stored in memory location k of the memory A2,

$A2'_{k,1}$ is the previous measured value (instant 1) from memory location k of the memory A2,

m_k is the current measured error square for carrier k,

k is the carrier number within the OFDM spectrum, increases with the frequency, $k = 0 \ldots K_{max}$,

1 is the number of the symbol, increases with time, $0 \leq 1$.

If the memory A2' is now to be used to illustrate the mean modulation error ratio on the screen, the contents of each individual memory location must be divided by the number of symbols 1+1 detected up to that point, which number is determined in a separate counter. Then, the

final value A2 can again be calculated in accordance with the equation

$$A2_{k,1} = \frac{A2'_{k,1}}{1+1}$$

This division allows a faster programme sequence within a digital signal processor.

The actual mean or maximum modulation error ratio can then be calculated from the values of A1 and A2 calculated in this way in a subsequent calculation stage in accordance with the following equation from the values $\overline{VM}$ known for the type of modulation used in each case:

$$MER_{MAX,k} = 100 \cdot \frac{\sqrt{A1_k}}{\overline{VM}} \qquad [\%]$$

$$MER_{RMS,k} = 100 \cdot \frac{\sqrt{A2_k}}{\overline{VM}} \qquad [\%]$$

If a display in dB is desired the percentage value can be converted in accordance with the following equation:

$$MER_{dB} = -20 \cdot 1g \left(\frac{MER[\%]}{100} \right) \qquad [dB].$$

As a result, a minimum value in dB is derived from the maximum value in per cent.

Fig. 2 shows the illustration of the maximum and mean modulation error ratio in a graph on the screen of a display device. The abscissa is scaled with the numbers of the individual carriers of the OFDM spectrum, between

0 and 6816 for example. The modulation error ratio calculated for each carrier in each case is plotted on the ordinate. The total of 1705 or 6817 carriers present per se in DVB-T could potentially lead to display resolution problems. Since a conventional LCD has a total of only 320 pixel columns for example, it is advantageous to divide the entire spectrum to be displayed as a whole into individual regions comprising only 320 carriers for example, and to illustrate these in succession or to combine a plurality of carriers simultaneously in one column of the display.

ART. 34 AMENDED CLAIMS 09/762210
JC02 Rec'd PCT/PTO 05 FEB 2001

Claims

1. Process for displaying the mean modulation error ratio MER_{RMS} of an orthogonal frequency division and multiplexing (OFDM) multicarrier signal, characterised in that

a) for each current modulation symbol I of each individual carrier k of the multicarrier signal, the square m_k of the error vector is calculated in accordance with the equation

$$m_k = |\text{error vector}_k|^2$$

b) this value m_k is set off against the contents of a memory location of a first memory (A2) associated with the same carrier k, which memory has as many memory locations as the OFDM signal has carriers, in accordance with the equation

$$A2_{k,1+1} = \frac{(A2_{k,1} \cdot 1 + m_k)}{(1+1)}$$

where

$A2_{k,1+1}$ is the new measured value (instant 1+1) which is to be stored in memory location k of the memory A2,

$A2_{k,1}$ is the previous measured value (instant 1) from memory location k of the memory A2,

m_k is the current measured error square for carrier k,

k is the carrier number within the OFDM spectrum, increases with the frequency, $k = 0\ldots K_{max}$,

ART 34 AMDT

l is the number of the symbol, increases with time, $0 \leq l$,

c) the mean modulation error MER_{RMS} is then calculated for each carrier from these values of the memory locations in accordance with the equation

$$MER_{RMS,k} = 100 \cdot \frac{\sqrt{\overline{A2}_k}}{\overline{VM}} \quad [\%]$$

where $\overline{VM}$ is the square weighted mean value of the amplitudes of all ideal signal statuses of the type of modulation used in each case of a carrier modulated with user data, and

d) this MER_{RMS} value is then illustrated on a graph for each individual carrier k as ordinate value of a diagram with the number of carriers as abscissa.

2. Process according to claim 1, characterised in that for the purpose of displaying the maximum modulation error ratio MER_{MAX}, the value m_k calculated in accordance with calculation stage a) is compared with the value of a memory location of a second memory (A1) associated with the same carrier k, which memory has as many memory locations as the OFDM signal has carriers, the value stored in this memory location being replaced by the current value when the current value is greater than that already stored,

e) the maximum modulation error ratio MER_{MAX} is then calculated for each carrier from these maximum values of the memory locations in accordance with the equation

ART 34 AMDT

$$MER_{MAX,k} = 100 \cdot \frac{\sqrt{A1_k}}{\overline{VM}} \ [\%]$$

wherein $\overline{VM}$ is the square weighted mean value of the amplitude of all ideal signal statuses of the modulation type used in each case of a carried modulated with user data, and

f) this MER-max value is then illustrated on a graph for each individual carrier k as ordinate value of a graph with the number of carriers as abscissa.

3. Process according to claim 1, characterised in that in process stage b) according to claim 1 an intermediate value is initially calculated in accordance with the equation

$$A2'_{k,1+1} = A2'_{k,1} + m_k$$

where

$A2'_{k,1+1}$ is the new measured value (instant 1+1) which is to be stored in memory location k of the memory A2,

$A2'_{k,1}$ is the previous measured value (instant 1) from memory location k of the memory A2,

m_k is the current measured error square for carrier k,

k is the carrier number within the OFDM spectrum, increases with the frequency, $k = 0 \ldots K_{max}$,

ART 34 AMDT

l is the number of the symbol, increases with time, $0 \leq l$.

and this intermediate value A2' is divided prior to display according to process stage d) by the number of symbols detected which have been counted in a separate counter in accordance with the equation

$$A2_{k,l} = \frac{A2'_{k,l}}{l+1}$$

4. Process according to one of the preceding claims, characterised in that
the values initially determined in percent for MER_{RMS} and/or MER_{MAX} are converted prior to their frequency-dependent graphic illustration into the unit dB in accordance with the equation

$$MER_{db} = -20.lg\left(\frac{MER[\%]}{100}\right) \qquad [dB].$$

ART 34 AMDT

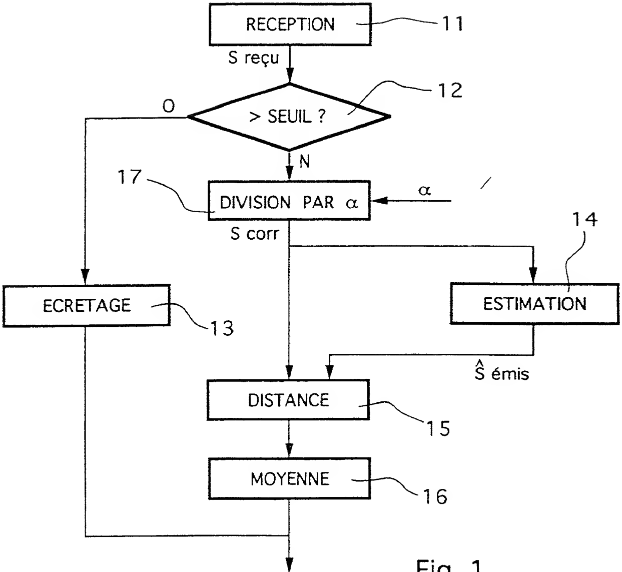
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Fig. 1

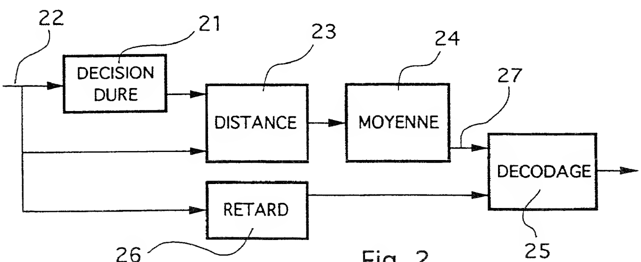
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Fig. 2

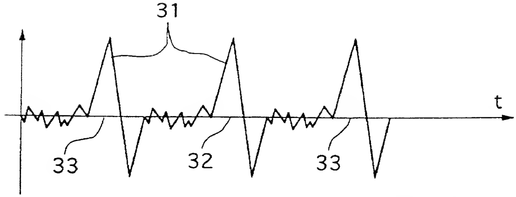
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Fig. 3

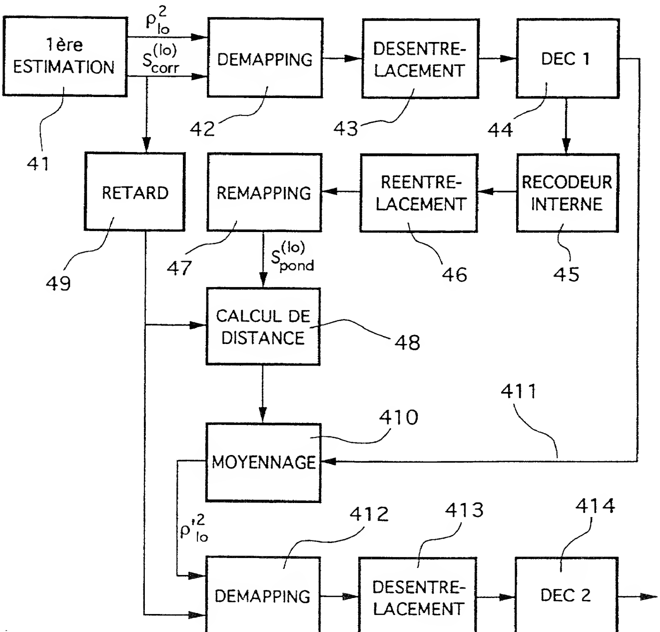
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Fig. 4

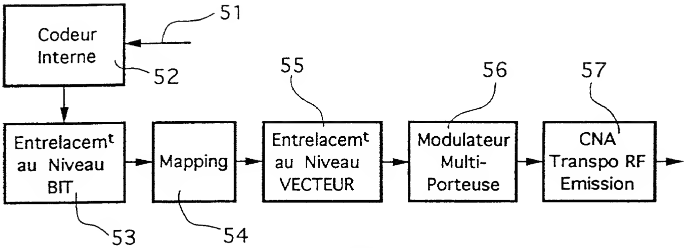

Fig. 5

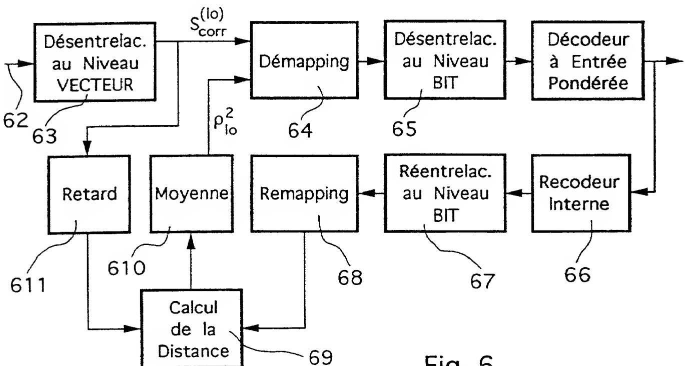

Fig. 6

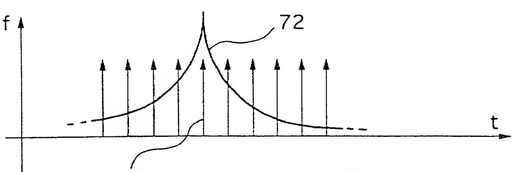

Fig. 7

Atty.Dkt.No.: 4100-0122P

Declaration and Power of Attorney For Patent Application (or PCT) Erklärung Für Patentanmeldungen Mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

daß mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

daß ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

(1) PROCESS FOR DISPLAYING THE MODULATION ERROR RATIO OF A MULTICARRIER SIGNAL

(1) ______________________

deren Beschreibung hier beigefügt ist außer das folgende Feld ist angekreuzt: (zutreffendes ankreuzen)

the specification of which is attached hereto unless the following box is checked: (check appropriate blocks)

[ ] (2) vorhergehend eingereicht

[ ] (3) am ______________ unter der

[ ] (4) U.S. Anmeldungsseriennummer ______________

der PCT International No. ______________

und [ ] (5) wurde am ______________ abgeändert (falls tatsächlich abgeändert).

[ ] (2) was filed ______________

[ ] (3) on ______________ as

[ ] (4) U.S. Appln. S. N. ______________

or PCT International No. ______________

[ ] (5) as amended on ______________ (if applicable)

Ich bestätige hiermit, daß ich Inhalt der obigen Patentanmeldung einschließlich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56 von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäß Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfinderurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

Atty.Dkt.No.:

German Language Declaration

Prior foreign applications / Priorität beansprucht

(6) 198 49 319.3 (Number) (Nummer)	GERMANY (Country) (Land)	26/OCT/1998 (Day/Month/year Filed) (Tag/Monat/Jahr eingereicht)	[ ] Yes Ja	[ ] No Nein
(6) (Number) (Nummer)	(Country) (Land)	(Day/Month/year Filed) (Tag/Monat/Jahr eingereicht)	[ ] Yes Ja	[ ] No Nein
(6) (Number) (Nummer)	(Country) (Land)	(Day/Month/year Filed) (Tag/Monat/Jahr eingereicht)	[ ] Yes Ja	[ ] No Nein

Ich beanspruche hiermit gemäß Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119(e), den Vorzug aller unten aufgeführten vorläufigen Anmeldungen.

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

(7) (Application Serial No.) (Anmeldeseriennummer) — (Filing Date) (Anmeldedatum)

(7) (Application Serial No.) (Anmeldeseriennummer) — (Filing Date) (Anmeldedatum)

Ich beanspruche hiermit gemäß Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 112 offenbart ist, erkenne ich gemäß Absatz 37, Bundesgesetzbuch, Paragraph 1.56 meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(8) (Application Serial No.) (Anmeldeseriennummer)	(Filing Date) (Anmeldedatum)	(Status) (patentiert, anhängig, aufgegeben)	(Status) (patented, pending, abandoned)
(8) (Application Serial No.) (Anmeldeseriennummer)	(Filing Date) (Anmeldedatum)	(Status) (patentiert, anhängig, aufgegeben)	(Status) (patented, pending, abandoned)

Ich erkläre hiermit, daß alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und daß ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, daß wissentlich und vorsatzlich falsche Angaben gemaß Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefangnis bestraft werden konnen, und daß derartig wissentlich und vorsatzlich falsche Angaben die Gueltigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patents gefährden werden.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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